Patent claims

1. A device for process optimization, comprising at least one optimization entity (1, 2, 3) for influencing one or more process parameters, and at least one monitoring entity (33) for monitoring the or each process parameter, characterized by at least one evaluation entity (4, 5, 6, 7) for automatically determining an optimization, which can be effected by the or each optimization entity (1, 2, 3), of the or each process parameter.

2. The device according to Claim 1,
characterized in that
each process parameter which must be optimized, and which is influenced by one or more optimization entities (1, 2, 3), is assigned an evaluation entity (4, 5, 6, 7) such that the optimization which is effected on the relevant process parameter by all participating optimization entities (1, 2, 3) can be determined by the evaluation entity (4, 5, 6, 7) online and in real time.

3. The device according to Claim 1 or 2,
characterized in that
the or each evaluation entity (4, 5, 6, 7) has at least one evaluation module (8) for automatically determining an optimization, which can be effected by a specific optimization entity (1, 2, 3), of the corresponding process parameter.

4. The device according to one or more of the Claims 1 to 3,
characterized in that
the evaluation module (8) is used for automatically determining a yield increase which is effected in relation to the relevant process parameter or for automatically determining a cost saving which is effected in relation to the relevant process parameter.

5. The device according to Claim 3 or 4,
characterized in that
the number of evaluation modules (8) in an evaluation entity (4, 5, 6, 7) which is assigned to a process parameter is dependent on the number of optimization entities (1, 2, 3) which influence the process parameter concerned.

6. The device according to one or more of the Claims 3 to 5,
characterized in that
the evaluation modules (8) provide an absolute optimization value and a time-related optimization value as output values (15, 21), thereby allowing absolute and time-related recording of the optimization which is effected for the relevant process parameter by each optimization entity (1, 2, 3).

7. The device according to one or more of the Claims 1 to 6,
characterized in that
all evaluation entities (4, 5, 6, 7) are connected to an overall evaluation entity, such that the effected overall optimization of all process parameters can be determined online and in real time by the overall evaluation entity.

8. The device according to one or more of the Claims 1 to 7,
characterized by
at least one time normalization entity (50, 56) for normalizing the time quantities which are used by all entities.

9. The device according to one or more of the Claims 1 to 7,
characterized by
at least one process-quantity normalization entity (63) for normalizing the process quantities which are used by all entities, in particular for normalizing variables and/or parameters.

10. The device according to one or more of the Claims 1 to 9,
characterized by
a display entity for depicting the effected optimization of the or

each process parameter and/or for depicting the effected overall optimization of all process parameters.

11. The device according to Claim 10,
characterized in that
the display entity simultaneously depicts the effected optimization of each individual process parameter and the effected overall optimization of all process parameters online and in real time in a dynamic spider diagram (77).

12. An MES (manufacturing execution system) device for optimizing processes, wherein the MES device is connected between an enterprise and production planning system, in particular an ERP (enterprise resource planning) device, and a monitoring and control system, in particular a PLT (process instrumentation and control) device, having the following features:

a) the MES device includes at least one optimization entity (1, 2, 3) for influencing one or more process parameters of the monitoring and control system, in particular of the PLT device,

b) the MES device includes at least one data determining entity (33) for monitoring the or each process parameter,

c) the MES device includes at least one evaluation entity (4, 5, 6, 7) for automatically determining an optimization of the or each process parameter, said optimization having been effected by the or each optimization entity (1, 2, 3).

13. The MES device according to Claim 12,
characterized in that
each process parameter of the monitoring and control system, in particular of the PLT device, which process parameter must be optimized and which process parameter is influenced by one or more optimization entities (1, 2, 3), is assigned an evaluation entity

(4, 5, 6, 7) such that the optimization which is effected on the relevant process parameter by the corresponding optimization entities (1, 2, 3) can be determined by the evaluation entity (4, 5, 6, 7), so that an ROI (return of investment) value which is achieved by the relevant optimization entity (1, 2, 3) can be determined online and in real time.

14. The MES device according to Claim 12 or 13,
characterized in that
the or each evaluation entity (4, 5, 6, 7) has at least one evaluation module (8) for automatically determining an ROI value of the corresponding process parameter, said ROI value being achieved by a specific optimization entity (1, 2, 3).

15. The MES device according to Claims 12, 13 or 14,
characterized in that
all evaluation entities (4, 5, 6, 7) are connected to an overall evaluation entity, such that the effected overall optimization of all process parameters, namely an overall ROI value of the MES device, can be determined online and in real time by the overall evaluation entity.

16. The MES device according to one or more of the Claims 12 to 15,
characterized in that
a display entity simultaneously depicts the ROI values which have been achieved by the relevant optimization entities (1, 2, 3) and the overall ROI value of the MES device online and in real time in a dynamic spider diagram (77).

17. A method for process optimization, wherein one or more process parameters are optimized by at least one optimization entity and wherein the process parameters are monitored by at least one

monitoring entity,
characterized in that
the effected optimization of the or each process parameter is determined automatically with the aid of at least one evaluation entity.

18. The method according to Claim 17,
characterized in that
a process parameter is optimized by one or more optimization entities, wherein the optimization which is effected by each optimization entity for the relevant process parameter is determined online and in real time.

19. The method according to Claim 17 or 18,
characterized in that
the effected overall optimization of all process parameters is determined online and in real time, and as an absolute and/or time-related quantity.